ADNI Alzheimer's Disease Neuroimaging Initiative

Measurement of Lipids (Total Cholesterol, Total Triglycerides, HDL-C, ApoA1, and ApoE) of Human Plasma Samples from the Alzheimer's Disease Neuroimaging Initiative using the Roche COBAS C311

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Objective

Measure the concentrations of total cholesterol, total triglycerides, HDL-C, ApoA1, and ApoE in human plasma samples from the ADNI 1 cohort using the Roche COBAS C311 sample analyzer (http://www.roche.hu/content/dam/roche_hungary/hu_HU/docs/cobas_c_311_en.pdf).

Assay Descriptions

The total cholesterol and total triglyceride assays are manufactured by Roche Diagnostics (Florham Park, NJ) and utilize an enzymatic colorimetric method. The HDL-C assay is also manufactured by Roche but utilizes a homogeneous enzymatic-colorimetric method. The ApoA1 assay from Roche employs an immunoturbidimetric method, as does the ApoE assay from Kamiya Biomedical (Tukwila, WA).

For more information regarding the specifications of each assay, please visit the following websites:
Total Cholesterol Assay (Roche, Part Number 03039773190):
https://usdiagnostics.roche.com/products/03039773190/PARAM41/overlay.html
Total Triglyeride Assay (Roche, Part Number 20767107322):
https://usdiagnostics.roche.com/products/20767107322/PARAM67/overlay.html
HDL-C Assay (Roche, Part Number 04399803190):
https://usdiagnostics.roche.com/products/04399803190/PARAM1201/overlay.html
ApoA1 Assay (Roche, Part Number 03032566122):
https://usdiagnostics.roche.com/products/03032566122/PARAM191/overlay.html
ApoE Assay (Kamiya, Part Number KAI-007):
http://www.kamiyabiomedical.com/03ClinicalDiagnosticsProducts/Datasheets/KAI-007.php

The assays are for research use only and are not for diagnostic use in the US.

Sample Analysis

The samples were analyzed using the COBAS C311 in the laboratory of Daniel J. Rader, MD at PSOM. Samples were coded by the ADNI Biobank under the auspices of Leslie M. Shaw, PhD

such that no information regarding the identities of the subjects was available to the laboratory staff conducting the assays. The plasma samples were thawed at room temperature, and 150uL aliquots were pipetted into assay cups for analysis based on the load list that was generated. The appropriate tests were programmed using the internal PC on the analyzer. The samples were manually placed on the analyzer in the cup positions that coincided with the program.

Calibrators and controls were used according to the manufacturer specifications for each assay. The TC and TG assays were calibrated using the (Calibrator for Automated Systems, C.F.A.S calibration) calibration material provided by Roche Diagnostics (Florham Park, NJ). The HDL and ApoA1 was calibrated using (C.F.A.S. Lipid) calibrator provided by Roche Diagnostics. The ApoE assay was calibrated using the ApoE calibrator provided by Kamiya Biomedical (Tukwila, WA).

Control materials are intended for use only as monitors of accuracy and precision. Two different manufacturers of control material are used when available. The Roche PreciControl ClinChem Multi Level 1 and Level 2 controls were used for the TC, HDL, TG and ApoA1 assays. Kamiya Biomedical Apolipoprotein control Level 1 and Level 2 was used for the ApoE assay. In addition to the Roche Control material, Bio Rad unassayed control Level 1 and Level 2 were used to test TC, HDL, and TG. The Bio Rad Immunology control material Level 1 and Level 2 were also used to test ApoA1 and ApoE.

How were the values generated?
The values were determined internally by the analyzer photometrically and turbidimetrically.

Dataset Information

This methods document applies to the following dataset(s) available from the ADNI repository:

Dataset Name	Date Submitted
Total Data CAD_ALZ Study 10.2.17 to 10.23.17_ADNI-1 Lipids Unblinded SD032218.xlsx	22 February 2018

About the Authors

This document was prepared by Linda Morrell (sample analysis, data generation), Stephanie DerOhannessian (manages project), and Mitchel A. Kling (study design, scientific oversight, report writing) under the auspices of Daniel J. Rader, MD. For more information please contact Stephanie DerOhannessian at +1 215 746 6402 or by email at srestine@pennmedicine.upenn.edu.